Claims

REMARKS

Claims remaining in the present application are numbered 1-22. Claims 15 and 16 have been amended. No new material has been added. Although Claims 1-22 were identified in Office Action 22MAR05 as "(previously presented)", they are corrected in this office action response as "(original)", with the exception of claims 15 and 16.

CLAIMS IN THE CASE

Please amend Claim 15 and Claim 16 as presented below.

1. (original) A hard disk drive, comprising:

at least one hard disk;

at least one slider corresponding to each disk;

a bias voltage source applying a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including a DC component and an AC component and being based on a flying-height spacing of the slider.

2. (original) The hard disk drive according to claim 1, wherein the predetermined bias voltage is based on a minimum slider-to-disk clearance change from a design flying height of the slider at a frequency of the AC component as the DC component of the predetermined bias voltage is varied.

3. (original) The hard disk drive according to claim 1, wherein the predetermined bias voltage is based on a minimum electrodynamic response of the slider to a first harmonic of the AC frequency of the AC component as the DC component is varied.

4. (original) The hard disk drive according to claim 1, wherein the flying – height spacing of the slider body is detected using a Laser Doppler Vibrometer.

5. (original) The hard disk drive according to claim 1, wherein the flying – height spacing of the slider body is detected by a read element on the slider body sensing a magnetic readback signal at a frequency of the AC component as a magnitude of the DC component is varied.

6. (original) The hard disk drive according to claim 5, wherein the AC component is a swept-frequency AC signal.

7. (original) The hard disk drive according to claim 5, wherein the AC component is a single-frequency AC signal.

8. (original) The hard disk drive according to claim 5, wherein the detected magnetic readback signal is a Position Error Signal relating to a position of the slider body with respect to the hard disk.

9. (original) The hard disk drive according to claim 1, wherein the predetermined bias voltage is based on a minimum interference between the slider body and the hard disk as the DC component is varied.

10. (original) The hard disk drive according to claim 1, wherein the predetermined bias voltage is applied to the slider body with respect to the hard disk.

11. (original) The hard disk drive according to claim 1, wherein the predetermined bias voltage is applied to the hard disk with respect to the slider body.

12. (original) The hard disk drive according to claim 1, wherein the bias voltage source controls a magnitude of the predetermined voltage based on the detected flying-height spacing of the slider body.

13. (original) The hard disk drive according to claim 12, wherein the predetermined bias voltage is based on a minimum slider-to-disk clearance change from a design flying height of the slider at a frequency of the AC component as the DC component is varied.

14. (original) The hard disk drive according to claim 12, wherein the predetermined bias voltage is based on a minimum interference between the slider body and the hard disk at a frequency of the AC component as the DC component is varied.

15. (currently amended) A hard disk drive, comprising:

at least one hard disk;

at least one slider corresponding to each disk;

a bias voltage source applying a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including an AC component and a DC component ~~that~~ wherein the DC component is based on a minimum variation of current that flows on and off the slider body as the DC component is varied.

16. (currently amended) A hard disk drive, comprising:

at least one hard disk;

at least one slider corresponding to each disk;

a bias voltage source applying a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including an AC component and a DC component wherein the DC component ~~and being~~ is based on a detected level of interference between the slider body and the hard disk.

17. (original) The hard disk drive according to claim 16, wherein the slider includes a magnetoresistive element, and

wherein the detected level of interference between the slider body and the hard disk is based on a minimum resistance of the magnetoresistive element as the DC component is varied.

18. (original) The hard disk drive according to claim 16, wherein the detected level of interference between the slider body and the hard disk is based on an output of a piezoelectric sensor sensing contact between the slider body and the disk as the DC component is varied.

19. (original) The hard disk drive according to claim 16, wherein the detected level of interference between the slider body and the hard disk is based on an output of an acoustic emission sensor sensing contact between the slider and the hard disk as the DC component is varied.

20. (original) The hard disk drive according to claim 16, wherein the predetermined bias voltage is applied to the slider body with respect to the hard disk.

21. original) The hard disk drive according to claim 16, wherein the predetermined bias voltage is applied to the hard disk with respect to the slider body.

22. (original) The hard disk drive according to claim 16, wherein the bias voltage source controls a magnitude of the predetermined voltage based on the detected level of interference between the slider body and the hard disk.

CLAIM REJECTIONS - 35 U.S.C. § 102(e)

Claims 16 and 20-22 are rejected under 35 U.S.C. § 102(e) as being anticipated by Feng et al. (U.S. Patent Number 6,529,342 B1) and are deemed unpatentable.

The rejection is respectfully traversed for the reasons below. It is respectfully submitted that Claims 16 and 20-22 are patentable over Feng et al.

Currently amended Claim 16 recites:

A hard disk drive, comprising:
at least one hard disk;
at least one slider corresponding to each disk;
a bias voltage source applying a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including an AC component and a DC component wherein the DC component is based on a detected level of interference between the slider body and the hard disk.

Claim 16 recites in part,

> "a bias voltage source applying a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including an AC component and a DC component wherein the DC component is based on a detected level of interference between the slider body and the hard disk."

Feng et al. does not teach,

> "a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including an AC component **and** a DC component" (emphasis added)

As understood by Applicants, Feng et al. teaches, "the voltage V may be a DC **or** an AC voltage (column 4, lines 41-42). The Applicants understand that in THE DESCRIPTION OF THE PREFERRED EMBODIMENT of Feng et al., it is suggested and taught the flying height is a function of either an applied DC voltage or as an applied AC voltage. Refer to column 6, lines 6-19 as an example of this teaching. It is the Applicants understanding that Feng et al. suggests and teaches these two applied voltages are separate and discrete components and are not combined. Thus, Applicants respectfully assert that Feng et al. does not suggest or teach,

> "a bias voltage source applying a predetermined bias voltage between a slider body and the corresponding hard disk, the predetermined bias voltage including an AC component and a DC component wherein the DC component is based on a detected level of interference between the slider body and the hard disk."

Since Applicants traverse that Claims 16 is not taught or suggested in Feng et al., Applicants respectfully present that dependant Claims 17-22 are also traversed by the above rational.

Conclusion

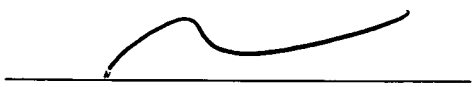
For the above rationale, Applicants respectfully submit that the present invention as currently amended is not anticipated and is patentable over Feng et al. under 35 U.S.C. § 102(e). As such, Applicants respectfully request that the rejections and objections of Claims 16-22 be withdrawn and Claims 16-22 be allowed as amended. Applicants respectfully request that Claim 15 be currently amended for clarity.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Should the Examiner have a question regarding the instant response, the Applicants invite the Examiner to contact the Applicants' undersigned representative at the below listed telephone number.

Please charge any additional fees or apply any credits to our PTO deposit account No. 50-2587.

Respectfully submitted,
Wagner, Murabito & Hao LLP

Dated: 9/12, 2005



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